

ABOUT YOUR HOUSE

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BUYING A TOILET

In your home the toilet uses the most water—accounting for approximately 30 per cent. Prior to 1980 many toilets flushed with 20 litres of water (the equivalent of about 10 2-litre pop bottles for each flush). By the early 1990s most new toilets in Canada were designed to flush with approximately 13 litres of water. In 1996 the Ontario Building Code introduced legislation requiring 6-litre toilets for all new homes and bathrooms. Other provinces and territories in Canada do not have this legislation currently, but it may be wise to check with your local municipality, as municipalities in British Columbia for example are able to implement their own 6-litre toilet bylaws. Six-litre toilets are often called ultra-low-flush toilets. Although while you are not required to replace existing 13-litre or more toilets with 6-litre models, it is a good way to save water.

Association (CSA) or Warnock Hersey. For more information on some of the toilets available on the market, see *"Independent 6-Litre Toilet Testing"* by CMHC.

Average Cost

Toilets come in a range of prices—from less than \$100 to over \$1,000. The average two-piece toilet costs between \$150 and \$200. Toilet seats are generally sold separately, and the price can range from \$10 to \$30. One-piece or "designer" toilets (figure 1) tend to cost more than the standard two-piece close-coupled (figure 2) type models found in most homes. Dual flush toilets cost between \$280 and \$500. It is important to note that more expensive toilets do not necessarily perform better than some of the bargains out there.

Where toilets are sold

Homeowners can purchase toilets from plumbing specialty stores, hardware stores, "box" stores, etc., while professional installers and builders usually purchase directly from wholesale distributors.

Most retail outlets will carry a limited number of toilet makes and models. Buyers may wish to visit a few stores to get a better idea of the various types of toilets currently available. Most toilets weigh approximately 45 kg, although two-piece toilets generally come in two separate boxes—one for the tank, and one for the bowl.

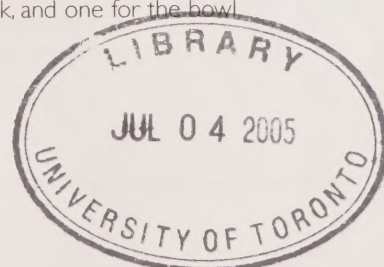


Figure 1 – One-piece toilet



Figure 2 – Two-piece toilet



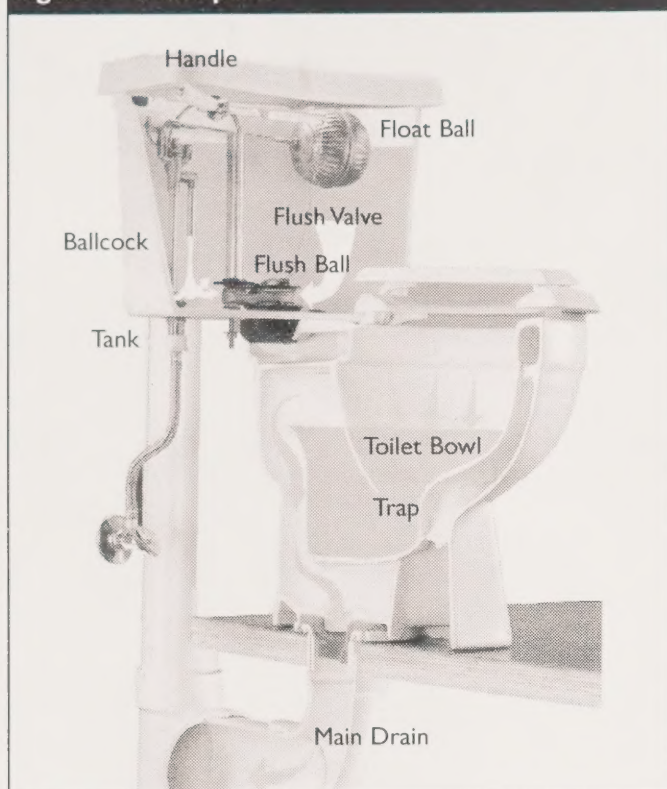
What is the difference between a 6-litre and 13-litre toilet? Besides an additional seven litres of water, the tank and bowl have been redesigned to maintain the same flush performance with less water. In many cases, the tank still holds 13 litres of water, but only six are flushed through at a time. Some toilets have become flapperless, while others known as a dual flush toilet, permit the user to select between a "half" flush for liquid waste and a "full" flush for solid waste.

There are many different makes and models of 6-litre toilets available in the marketplace. They range in price, and some work better than others. Ensure the toilet you are considering has been tested at an accredited lab such as Canadian Standards



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Figure 3 – Toilet parts



Tanks

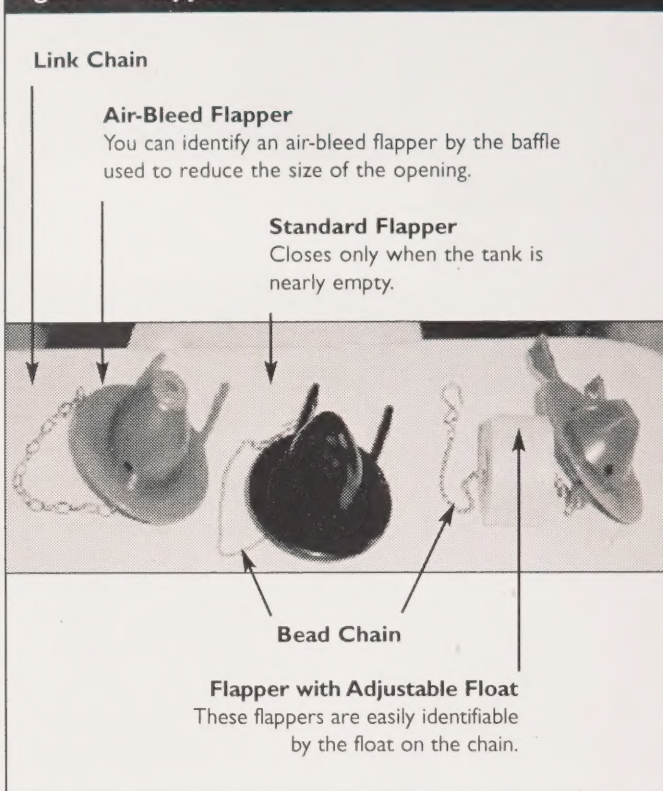
Tank size can become an important factor if you are replacing an existing toilet. This is especially true if you do not intend to paint or re-decorate behind the old toilet because many 6-litre tanks are smaller and may not cover the same wall area. If the wall behind your toilet is unfinished, you should measure the tank size prior to shopping for a new one. Replacing an existing toilet with only a new 6-litre tank is not recommended as the slope of the bowl has been redesigned to accommodate less water.

Insulation

Toilet tanks are prone to "sweating" when the weather is hot and humid. As cold water refills the tank after a flush, the tank surfaces become cooler. The sweating is caused when the humidity in the air condenses on these cold surfaces.

Some tanks are insulated to prevent sweating. Many 6-litre toilets are not insulated. They discharge only about half of the water in the tank; therefore, the cold water refilling the tank is somewhat diluted by the warmer water that remains in the tank and there is less chance of sweating.

Figure 4 – Flappers



Flappers

The "flapper" (figure 4), or flush valve, lifts and allows water to be discharged from the tank when the handle is pressed (though not all toilets use flappers). Toilet flappers should be replaced every five years as they tend to deteriorate over time and cause leaking. Leaking flappers can waste thousands of litres of water each year costing you money, or simply wasting limited well water.

Flapper Leakage

Although toilet bowls and tanks can last 25 years or more, most toilet flappers are warranted for five years. If they are left in the toilet too long they may lose their resiliency and begin to leak. Leaking flappers can cause your toilet to "run on". If this occurs, you should hear the toilet filling periodically even if it has not been flushed.

Flapper test

1. Do not flush the toilet for approximately 15 to 30 minutes. Then lift the lid and note the water level in the tank. Next, flush the toilet and note whether the water level fills the tank to a higher level than before. If so, the flapper has been leaking.
2. You can also check for leaking flappers by adding dye, which can either be food colouring or special toilet dye tablets, to the tank water. Wait 15 to 30 minutes and check to see if there is any dye in the bowl. If so, the flapper has been leaking.

Finding the correct replacement flapper, can be difficult as there are many different types of flappers used by manufacturers, and often they are specific to that toilet. Installing the wrong flapper can lower the water savings or reduce the flush performance. Ensure when selecting your toilet, that you are able to purchase a certified replacement flapper that is designed especially for your toilet type.

Types of Fill Valves

Fill valves (ballcocks) are controlled by the level of water in the toilet tank. They open when the tank water level is low and they close when the tank level is full. The fill valve should close when the tank water level is approximately 10-15 mm from the top of the overflow tube.

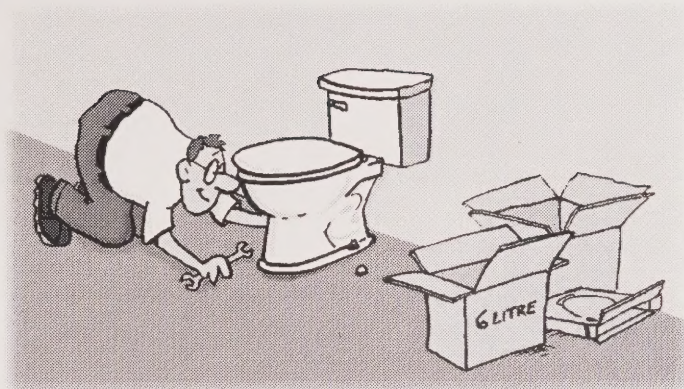
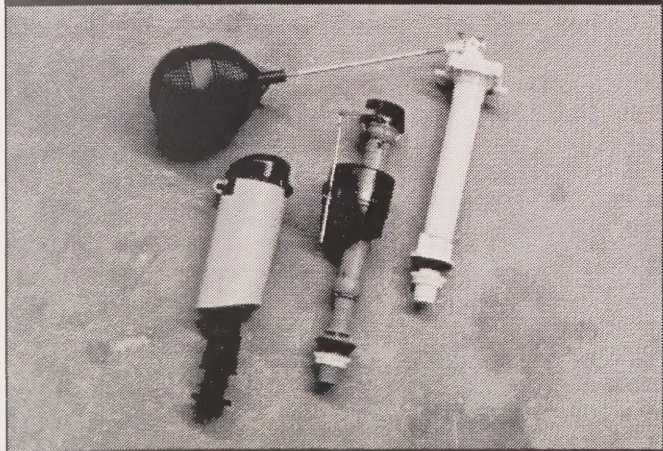
Fill Valve Leakage

Fill valves (or ballcocks) can also leak—that is, they may not shut off completely after a flush cycle. A leaking fill valve will cause the water in the tank to continually run into the overflow tube and into the bowl. You may see the tank water overflowing into the overflow tube, you may hear a constant “hiss” from the fill valve, or you may notice that water is continuously leaking into the bowl if you have a leaking fill valve. This should be replaced with an appropriate new fill valve.

Chain

The chain connects the flapper to the toilet flush lever. Chains are available in a variety of materials. Some tests have shown that rubber chains can close prematurely or stay open longer than required leading to highly variable flush volumes. Link chains can also get twisted or “hung up”. Metal bead chains appear to provide the most consistent performance.

Figure 5 – Fill valves



Bowl

If you do not intend to make changes to the bathroom flooring, then the bowl footprint, or size of the area that it will cover on the floor, is an important consideration when replacing an existing toilet. If the bowl has a smaller footprint or a significantly different footprint shape it may not cover the area that is exposed when the old toilet is removed. If you are planning to install new flooring, the footprint isn't an issue. Bowls come in two styles, standard and elongated.

Glazing

When shopping for your toilet ask if the bowl has been glazed throughout the trapway. This allows materials to move through the trapway with less friction.

Warranty

Some toilets come with a warranty and some do not. The warranty is often voided if chlorine pucks or cleaners are placed inside the tank, as this deteriorates the plastic parts of the working pieces.

Rebate Opportunities

Some municipalities offer rebate incentives, typically between \$40-\$200, to homeowners purchasing 6-litre toilets. The reasons for these programs are to reduce municipal water demands or wastewater volumes deferring new infrastructure costs.

Water savings

Whether you are on a well or on municipal water, water savings can lessen the impact you make on the environment and reduce your water or hydro (for your pump) bills, and if applicable will help extend the life of your well.

The amount of water you save will depend on:

- (a) the flush volume of the existing toilet; and
- (b) how often the toilet is flushed.

For example, if you are replacing a toilet that flushes with 18 litres with a 6-litre model, and the toilet is used 10 times per day, you would expect a savings of 120 litres per day. For example,

$$(18 \text{ litres/flush} - 6 \text{ litres/flush}) \times 10 \text{ flushes/day} = 120 \text{ litres/day.}$$

Additional water economy can be achieved by installing a dual flush toilet. Field studies have shown that dual flush toilets can save approximately 25 per cent more water than a conventional 6-litre toilet.

Conclusion

Water-efficient 6-litre toilets are available in many municipalities. A family of three would expect to save approximately 120 litres per day by replacing standard toilets with a 6-litre model.

Most 6-litre toilets have been re-designed; many incorporate new technology and re-engineered tanks and bowls to improve their flushing performance while saving water. Some 6-litre toilets perform better than others, and more expensive toilets do not always perform better than less expensive models.

Although the Building Code does not require the replacement of existing toilets with 6-litre models, their use can help reduce water bills, reduce strains on water supply and wastewater collection infrastructure, and improve the environment.

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Produced by CMHC

02-06

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